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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,518	08/01/2001	John T. Moore	M122-1669	6082

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EXAMINER

DANG, PHUC T

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 03/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,518

Applicant(s)

MOORE, JOHN T.

Examiner

PHUC T DANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-21 and 31-46 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 9, 22, 23 and 25 is/are rejected.
- 7) ☒ Claim(s) 4, 6-8, 10, 11, 13-16, 24 and 26-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Information Disclosure Statement

1. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on August 1, 2001.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 9 and 22 are rejected under 35 U.S.C. 102 (e) as being anticipated by Liaw et al. (U.S. Patent No. 6,177,338 B1) or McDaniel et al. (U.S. Patent No. 6,350,679 B1).

Liaw or McDaniel discloses a method of forming memory circuitry sequentially comprising forming a plurality of memory cell access transistor gates over a semiconductor substrate; forming a plurality of metal interconnect lines over a semiconductive substrate; forming a device comprising two metal comprising electrodes separated by a voltage or current controlled resistance settable semiconductive material, the resistance settable semiconductive material being formed after the metal interconnect line [‘338, Fig. 6 and col. 5, lines 33-52 or ‘679, Fig. 1].

Liaw also discloses the memory cell storage devices respectively comprise two electrodes separated by the resistance settable semiconductive material [Fig. 6].

3. Claims 12 are rejected under 35 U.S.C. 102(e) as being anticipated by McDaniel et al. (U.S. Patent No. 6,350,679 B1).

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McDaniel discloses a method of forming non-volatile random access memory circuitry comprising forming a plurality of memory cell access transistor gates over a semiconductor substrate; forming a plurality of metal interconnect lines over the substrate and the memory cell access transistor gates; after forming the conductive metal interconnect lines, forming respectively first memory cell electrodes in electrical connection with respective memory cell access transistor incorporating the memory cell transistor gates; forming voltage or current controlled resistance settable semiconductor material in electrical connection with respective first electrodes; and forming at least one second memory cell electrode in electrical connection with the voltage or current controlled resistance settable material [Fig. 1 and col. 3, lines 54+].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liaw et al. (U.S. Patent No. 6,177,338 B1) as applied to claims above, and in view of Chiang et al. (U.S. Patent No. 6,143,604).

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Liaw teaches a method of forming integrated circuitry as in the claimed invention but lacks anticipation of the metal interconnect lines comprise a conductive metal silicide.

Chiang discloses the metal interconnect lines comprise a conductive metal silicide [col. 1, lines 44-64].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of the metal interconnect lines comprise a conductive metal silicide of Chiang to Liaw for a purpose of improving the method of forming memory circuitry.

5. Claims 3, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liaw et al. (U.S. Patent No. 6,177,338 B1) as applied to claims above, and in view of McDaniel et al. (U.S. Patent No. 6,350,679 B1).

Liaw teaches a method of forming integrated circuitry as in the claimed invention but lacks anticipation of the metal interconnect lines comprise a conductive elemental metal or metal alloy comprising at least two elemental metals.

McDaniel discloses the metal interconnect lines comprise a conductive elemental metal or metal alloy comprising at least two elemental metals [Fig. 1 and col. 3, lines 54-61].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of the metal interconnect lines comprise a conductive elemental metal or metal alloy comprising at least two elemental metals of McDaniel to Liaw for a purpose of improving the method of forming memory circuitry.

Allowable Subject Matter

6. Claims 17-21 and 31-46 would be allowed.

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The following is a statement of reason for the indication of allowable subject matter:

Claims 17-21 and 31-46 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention. Liaw et al. (U.S. Patent No. 6,177,338 B1) and McDaniel et al. (U.S. Patent No. 6,350,679 B1), taken individually or in combination, do not teach the claimed invention forming at least one opening through the metal interconnect line to at least one of the two conductive device components.

Claims 4, 6-8, 10-11, 13-16, 24 and 26-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims because these claims are depend the independent claims 1, 9, 12 and 22.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is 703-305-1080. The examiner can normally be reached on 8:00 am-5:00 pm.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on 703-308-4910. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-5841 for After Final communications.

9. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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Phuc T. Dang PD

Examiner

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Hoai V. Ho
Primary Examiner
A.C. 2818

March 19, 2002